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John Pappalardo, *Chairman* | Paul J. Howard, *Executive Director*

To: Paul J. Howard, Executive Director
From: Dr. Steve Cadrin, Chairman, Scientific and Statistical Committee
Date: June 23, 2009

Subject: Monkfish Amendment 5

The Scientific and Statistical Committee (SSC) was asked to develop recommendations on maximum sustainable yield (MSY) as well as catch limits and targets for the 2011-2013 fishing years, including the catch associated with overfishing (OFL), Acceptable Biological Catch (ABC) and Annual Catch Targets (ACTs) for the northern and southern management units of monkfish based on calculations by the Monkfish Plan Development Team (PDT). Terms of Reference for the SSC were:

1. *Review and provide guidance on the PDT's updated calculation of MSY and OFL reference points (using exploitable biomass rather than total biomass), and ABC. Set ABC in accordance with the reauthorized Magnuson-Stevens Act.*
2. *Review and provide guidance on the PDT's calculation of various catch targets (ACTs) using the SCALE model for fishing years 2011-2013.*

In March 2009, the SSC provided recommendations on methods for specifying Annual Catch Limits: SSC:

1. *The SSC endorses the proxy reference points for F_{MSY} and B_{MSY} as well as the estimate of stock size derived by the 2007 Data Poor Stocks Workshop. However, considerable uncertainties in the assessment model preclude its use to determine probability of exceeding the projected Overfishing Level of catch.*
2. *An interim Acceptable Biological Catch should be derived as the product of the average exploitation rate during the recent period of stable or increasing trend in biomass for each management unit and the most recent estimate of exploitable biomass. Therefore, the method of determining ABC should be considered an interim proxy until Overfishing Level of Catch and its uncertainty can be projected.*
3. *Catch targets should be less than the interim ABC to avoid reactive accountability measures.*

On April 30, 2009, the SSC reviewed two documents and associated presentations by the Monkfish Plan Development Team (PDT):

1. Initial Report of the Monkfish PDT to the NEFMCôs Scientific and Statistical Committee
2. Monkfish PDT Report t for the April 30th SSC Meeting on Monkfish Amendment 5.

The 2007 Data Poor Stocks Workshop (NEFSC 2007) concluded that F_{max} is a proxy for F_{MSY}, and the average observed biomass is a proxy for B_{MSY}, but a MSY proxy was not determined. An approximation of MSY was calculated by the PDT as the catch associated with F_{max} and the average observed biomass (17,000 mt for the north and 25,000 mt for the south). However, the F_{MSY} and B_{MSY} proxies were chosen independently and are not consistent (i.e., fishing at F_{max} is not expected

to maintain the mean of observed biomass), and MSY should ideally be derived as the long-term yield expected by fishing at F_{MSY}. Given the data-poor status of monkfish, the PDTôs calculation of MSY should be used as a proxy until more consistent reference points can be derived.

The PDT assumed the recent selectivity pattern of the fishery to derive exploitable biomass for the calculation of catch limits and targets. The most recent estimates of exploitable biomass (for 2006) are 97,940 mt in the north and 98,250 mt in the south. The average exploitation rates during the recent period of stable or increasing trends in biomass are 0.18 in the north and 0.14 in the south. Therefore, according to the interim ABC specification method recommended by the SSC in March 2009 (above), the ABCs for 2011-2013 fishing years are 17,485 mt in northern management area and 13,326 mt in southern management area. The SSC will re-consider ABC recommendations for the 2014 fishing year, based on updated information (a stock assessment is scheduled for 2010).

The SSC recognizes that the interim ABC for the northern management area is slightly greater than the MSY proxy. As described above, the MSY proxy is simply the combination of F_{MSY} and B_{MSY} proxies that were independently derived, and should not be considered a constraint on ABC. National Standard Guidelines provide that the catch associated with overfishing (OFL) will fluctuate above and below MSY, and at high stock sizes ABC may exceed MSY. The most recent estimate of exploitable biomass of monkfish in the north is 33% greater than the B_{MSY} proxy, justifying an interim ABC that is slightly greater than the MSY proxy.

The Councilôs determination of Annual Catch Limit shall be less than or equal to the SSCôs ABC recommendation. The monkfish PDT provided several projections of stock biomass from 2006 to 2011 to evaluate the effects of alternative Annual Catch Targets for 2009-2011. However, the SSC accepted the conclusions from the 2007 Data Poor Stocks Workshop (NEFSC 2007) that the SCALE model was not considered to be a suitable basis for projection.

Annual Catch Targets should be based on performance of the management system that is decided upon by the Council, including the desired risk of exceeding the Annual Catch Limit and the system of Accountability Measures (AMs) for exceeding the ACL. The Council should consider sources of management uncertainty to determine the appropriate buffer between ACL and ACT. Although the revised management scheme is expected to affect management uncertainty, the fishery has been managed by catch targets since 2000; catch targets have been exceeded more often in the southern area, but recent catches have been less than targets. The SSC identified the in-season estimation of discarded catch to be a major source of uncertainty in controlling catch to be less than the ACLs. Recent discard estimates have been approximately 7% of landings in the north and 22% of landings in the south.

SSC Recommendations:

1. **Acceptable Biological Catch for the 2011-2013 fishing years should be 17,485 mt for the northern management unit and 13,326 mt for the southern management unit of monkfish.**
2. **Annual Catch Targets should be based on performance of the management system that is decided upon by the Council, including the desired risk of exceeding the Annual Catch Limit and the system of Accountability Measures (AMs). The Council should consider the sources of management uncertainty (e.g., in-season monitoring of landings and discards) to determine the appropriate buffer between ACL and ACT.**

Reference
Northeast Fisheries Science Center (NEFSC). 2007. Monkfish assessment report for 2007. NEFSC Ref Doc. 07-21.